

1 REMARKS

2 Status of the Claims

3 Claims 1-34 are pending in the application. None of the claims have been amended in this response.

4 Oath/Declaration

5 The Examiner has located an article by the inventor, Michael K. Zyskowski, entitled "Aircraft
6 Simulation Techniques Used in Low-Cost, Commercial Software," AIAA Modeling and Simulation
7 Technologies Conference and Exhibit, August 11-14, 2003, Austin, Texas.
8 <http://fsinsider.com/articles/aircraftsimulation.com>, hereinafter referred to as "Zyskowski.". Under the
9 section entitled "CORE SIMULATION ENGINE," the Examiner notes that the author on page 2, column 2
10 has indicated that he does not claim to have designed or otherwise invented all the information within the
11 article, but the Examiner reminds the applicant of his duty to disclose to the Office all information known to
12 the inventor to be material to patentability as defined in 37 C.F.R. § 1.56. Since the disclosure of this article
13 is no more relevant than the admitted prior art represented by previous releases of Microsoft Corporation's
14 FLIGHT SIMULATOR software program, there was no reason for applicant to have brought this article to
15 the attention of the Examiner.

16 Claims Rejected under 35 U.S.C. § 112

17 The Examiner has rejected Claims 1-18 under 35 U.S.C. § 112, second paragraph, as being
18 indefinite for failing to particularly point out and distinctly claim the subject matter that applicant regards as
19 his invention. The Examiner asserts that the term "substantially" used in Claims 1 and 12 renders the claims
20 indefinite because it is unclear what are the metes and bounds of this limitation.

21 Applicant respectfully disagrees and the Examiner is directed to review the Federal Circuit case,
22 *Liquid Dynamics Corp. v. Vaughan Co., Inc.*, (January 23, 2004) wherein the term "substantial" was
23 interpreted to be a meaningful modifier implying "approximate" rather than "perfect." Therefore, Claim 1
24 is directed towards describing a method for enabling a user to create or modify a design for an aircraft and
25 evaluate flight characteristics of the design, wherein the interactive, simulated flying of the aircraft enables
26 the user's evaluation to be approximately based on a point of view of a pilot flying the aircraft. Claim 12 is
27 directed towards a method for enabling a user to create or modify a design for an aircraft and evaluate flight
28 characteristics of the design as created or modified by the user, wherein the interactively, simulated flying of
29 the aircraft enables the user's evaluation to be approximately based on a point of view of a pilot flying the
30 aircraft.

1 In each of these independent claims, applicant has used the term “substantially” in the claims
2 (instead of the word “approximately”) to indicate that the user’s evaluation is primarily based on a point of
3 view of a pilot flying the aircraft, but possibly differing in at least some small degree. Clearly, a simulation
4 of any kind is typically never perfect in representing the real experience being simulated. There is no reason
5 why one of ordinary skill in the art would fail to understand the intended meaning of the term
6 “substantially” as used in each of the independent claims in this case, and the claims are NOT unclear
7 because they include this term.

8 If the Examiner has any further questions, the Examiner is respectfully urged to review the meaning
9 of this term with his Supervising Examiner, since “substantially” is a term that is commonly used in claims
10 and is well accepted as not raising any issue under § 112. Accordingly, this rejection of Claims 1 and 12
11 under 35 U.S.C. § 112, second paragraph, should be withdrawn. Because the same issue is addressed in
12 regard to the dependent claims, dependent Claims 2-11 and 13-18 are also not justifiably rejected under
13 § 112, for the reasons pointed out above.

14 Requirement For Additional Information Regarding the Issue of Public Use or On Sale Activity

15 The Examiner has indicated that in order for him to properly consider patentability of the claimed
16 invention under 35 U.S.C. § 102(b), he requires additional information as follows:

- 17 (1) Information regarding the features of the different versions of Microsoft Flight simulator
18 dating back to the versions titled “FS98” and “CFS1.0” (as mentioned in column 2, page 2
19 of Zyskowski) and
- 20 (2) Information as to how these versions of the Microsoft Fight Simulator starting with “FS98”
21 and “CFS1.0” differ from the claimed invention.
22

23 Applicant has provided information regarding the features of the different versions as required in
24 Item 1 as Enclosures A, B, C, D, and E. Also, applicant has provided information as required in Item 2
25 regarding how these versions differ from the claimed invention as shown in the Table, in the attached
26 Declaration of the Inventor.

27 It may also be helpful to reproduce a portion of the specification that summarizes some of these
28 differences. With respect to how these versions differ from the claimed invention as requested in Item (2),
29 notice that in the specification, applicant has stated the following:
30

1 While the variety of aircraft that are provided in the FLIGHT SIMULATOR
2 2002™ program and other flight simulator programs are relatively extensive, the more
3 dedicated flight simulator hobbyist will likely want to modify an existing design and
4 eventually create his/her own aircraft design, and then test the design by flying it within the
5 flight simulation program. Many parameters controlling an aircraft's design affect how it
6 will fly (or even if it will fly). Therefore, it is important that an appropriate flight dynamics
7 editing program provide a *relatively user-friendly interface to enable these parameters to be*
8 *efficiently selected by a user.* Once the user has created a design or modified an existing
9 design for an aircraft by choosing specific parameters, another program module must then
10 implement the design by generating flight model data for the aircraft, based on the selected
11 parameters. To enable the user to test the flight characteristics of the design in the flight
12 simulation program, the flight model data that are thus generated must be in a form that is
13 compatible with the flight simulator program. For example, FLIGHT SIMULATOR
14 2002™ requires that the flight model data for an aircraft be provided in an aircraft.air file
15 and an aircraft.cfg file (where the italicized word "aircraft" in the name of the "aircraft.air"
16 file is replaced with a specific word or phrase identifying the aircraft). The aircraft.air file
17 includes binary data that define aerodynamic coefficients and non-linear tables of data for an
18 aircraft, while the aircraft.cfg file includes parameters other than flight data, such as
19 specification of the type and design of the landing gear and scaling factors that are to be
20 applied to the aerodynamic data. (Emphasis added, page 2, lines 1-21.)

21 Earlier versions of Microsoft Corporation's FLIGHT SIMULATOR™ program
22 included an add-on program called "FLIGHT SHOP™" that enabled *some editing* of the
23 parameters for an aircraft design, but it is not usable with the FLIGHT
24 SIMULATOR 2002™ program, since the add-on program produces only a single data file
25 that is not compatible with the current flight simulator program. (Emphasis added, page 2,
26 lines 22-26.)

27 Thus, prior to the claimed invention, neither FS98, CFS1.0 or any other previous versions included
28 the following features:

- 29 (a) a user interface that enables the user to select parameters (see applicant's Figures 7-17) in
30 addition to those previously available to be user selected, thus enabling a user to provide
more input in designing and defining an aircraft. In the italic font portions above,
respectively, applicant discloses that a user-friendly interface is available to select
parameters as compared with earlier versions that only allowed some editing of the
parameters, as highlighted in the bold font portion.
- (b) the generation of flight model data from the user input parameters is compatible with the
flight simulator program. In the underlined portions above, applicant discloses how the
flight model data that is generated must be in a form that is compatible since the add-on
program previously used produced only a single incompatible data file.

1 (c) The result is described above, i.e., that a user is enabled to test the flight characteristics of
2 the user's design in the flight simulation program;

3 (d) Thus, earlier versions lacked the ability to create from scratch, flight model data files
4 compatible with the flight simulator as shown in FIGURE 4, and a user was unable to
5 evaluate this custom design in real-time simulated flight within earlier versions based on a
6 point of view of a pilot flying the aircraft.

7
8 Therefore, the Examiner is respectfully requested to withdraw his rejection of Claims 1-34 under 35
9 U.S.C. § 102(b) based upon a public use or sale of the invention, since the earlier versions of Flight
10 Simulator or Combat Simulator did not provide this functionality that is recited in applicant's claims.

11 Claims Rejected under 35 U.S.C. § 102(b) As Being Anticipated

12 The Examiner has also rejected Claims 1-34 under 35 U.S.C. § 102(b) as being anticipated by
13 Zyskowski. The Examiner asserts that Zyskowski describes each element of applicant's claimed invention.
14 Applicant respectfully disagrees for the reasons noted below.

15 In the interest of reducing the complexity of the issues for the Examiner to consider in this response,
16 the following discussion focuses on independent Claims 1, 12, 19, and 29. The patentability of each
17 dependent claim is not necessarily separately addressed in detail. However, applicant's decision not to discuss
18 the differences between the cited art and each dependent claim should not be considered as an admission that
19 applicant concurs with the Examiner's conclusion that these dependent claims are not patentable over the cited
20 references. Similarly, applicant's decision not to discuss differences between the prior art and every claim
21 element, or every comment made by the Examiner, should not be considered as an admission that applicant
22 concurs with the Examiner's interpretation and assertions regarding those claims. Indeed, applicant believes
23 that all of the dependent claims patentably distinguish over the references cited. However, a specific traverse
24 of the rejection of each dependent claim is not required, since dependent claims are patentable for at least the
25 same reasons as the independent claims from which the dependent claims ultimately depend.

26 Patentability of Independent Claim 1

27 Significant differences exist between Claim 1 and Zyskowski because Zyskowski does not teach or
28 suggest applicant's claim recitation of simulated flying of the aircraft using the plurality of flight model data
29 files based on a user's design of the aircraft. In its entirety, applicant's step (d) recites (with emphasis
30 added):

1 enabling the user to **evaluate the flight characteristics of the design** by interactive,
2 simulated flying of the aircraft within a flight simulation program *using the plurality of flight*
3 *model data files*, wherein said interactive, simulated flying of the aircraft enables the user's
4 evaluation to be substantially based on a point of view of a pilot flying the aircraft.

5 For example, applicant's FIGURE 2 illustrates a block diagram that shows the primary program
6 modules used in implementing a preferred embodiment of the present invention. Specifically, flight
7 simulator 32 receives as input at least two files, AIRCRAFT.AIR 28 and AIRCRAFT.CFG 30. The
8 disclosure explains:

9 Once a user has entered the parameters to modify an existing design or create a new
10 design for an aircraft using flight dynamics editor 24, those parameters effecting the flight
11 model characteristics are input to an aerodynamic coefficients generator module 26. Again,
12 details of the aerodynamic coefficients generator module are disclosed below. The
13 aerodynamic coefficients generator module 26 processes the input data and produces
14 aerodynamic coefficients necessary to produce an accurate flight model for the aircraft
15 design. **To ensure compatibility**, this process produces two data files including an
16 *aircraft.air* data file 28 and an *aircraft.cfg* data file 30. The *aircraft.air* data file includes the
17 aerodynamic coefficients for the aircraft while the *aircraft.cfg* file includes details relating to
18 other aspects of the aircraft design that may not be directly related to the manner in which it
19 flies, such as its control panel configuration. Note that the word *aircraft* in the *aircraft.air*
20 file is generic and will be replaced with a word or phrase that identifies a specific design of
21 aircraft. **These two data files are used as input to a flight simulator module 32 to enable**
22 **the user to experience the simulated flying of the aircraft design thus modified or**
23 **created.** (Emphasis added, applicant's specification, page 10, lines 11-25.)

24 As emphasized in the citation reproduced above, to ensure compatibility, two data files are
25 produced, *aircraft.air* data file 28 and *aircraft.cfg* data file 30. The *aircraft.air* data file 28 includes the
26 aerodynamic coefficients. The *aircraft.cfg* data file 30 file includes details relating to other aspects of the
27 aircraft design, such as its control panel configuration. These data files are produced by aerodynamic
28 coefficients generator 26 (see FIGURE 4), which takes geometrical inputs and creates, from scratch, the
29 aerodynamic coefficients needed to properly simulate an aircraft in real-time simulation. These
30 aerodynamic coefficients are input to the Flight Simulator to enable the user to experience the simulated
flying of the aircraft. More specifically, the specification discloses that "...the more dedicated flight
simulator hobbyist will likely want to modify an existing design and eventually create his/her own aircraft
design, and then test the design by flying it within the flight simulation program" (applicant's specification,
page 2, lines 3-4) and "FLIGHT SIMULATOR 2002™ requires that the flight model data for an aircraft be
provided in an *aircraft.air* file and an *aircraft.cfg* file (where the italicized word "*aircraft*" in the name of the

1 “*aircraft.air*” file is replaced with a specific word or phrase identifying the aircraft). The *aircraft.air* file
2 includes binary data that define aerodynamic coefficients and non-linear tables of data for an aircraft, while
3 the *aircraft.cfg* file includes parameters other than flight data, such as specification of the type and design of
4 the landing gear and scaling factors that are to be applied to the aerodynamic data” (applicant’s
5 specification, page 2, lines 14-21). Thus, applicant illustrates how the user is enabled to evaluate the flight
6 characteristics of the design by interactive, simulated flying of the aircraft within a flight simulation program
7 such as FLIGHT SIMULATOR 2002™ using the plurality of flight model data files (such as *aircraft.air*
8 data file 28 and *aircraft.cfg* data file 30) , wherein said interactive, simulated flying of the aircraft enables the
9 user’s evaluation of the design to be substantially based on a point of view of a pilot flying the aircraft.

10 In contrast, Zyskowski does NOT teach or suggest that a user can evaluate the design of an aircraft
11 that the user has designed in a flight simulation program using the flight model data files because previously
12 there were no flight model data files that were even compatible with the flight simulator program. The
13 Examiner has asserted that Zyskowski discloses applicant’s Claim 1 and has cited pages 1, 2, 6 and 11 in
14 support of his assertion. The Examiner notes that Zyskowski post-dates the filing date of the application,
15 but that it teaches prior art that pre-dates the filing data of the application. Specifically, the Examiner asserts
16 that Zyskowski teaches on page 6, aerodynamic coefficients used to mathematically model airplane
17 behavior. These equations are attributed to a reference from 1995 that of Roskam, Jan, Airplane Flight
18 Dynamics and Automatic Flight Controls, Part 1, DAR Corporation, Lawrence, Kansas. Thus, the
19 Examiner concludes that the coefficients were old and well known at the time the application was filed. In
20 addition, the Examiner asserts that Zyskowski on page 2, teaches the use of an interactive “core simulation
21 engine” in both Microsoft Flight Simulator (MSFS) and Microsoft Combat Flight Simulator (MSCFS). The
22 Examiner notes that MSCFS was introduced a year after the release of FS98, which the Examiner interprets
23 as being in 1997 or 1998. The interactive simulation using the “core simulation engine” was therefore on
24 sale more than a year before the instant application was filed. The Examiner also notes that Zyskowski in
25 the Abstract on page 1, teaches interactive simulated flying of the aircraft.

26 However, please refer to the attached Declaration of Michael K. Zyskowski, wherein the different
27 versions of Microsoft Flight Simulator dating back to the versions titled “FS98” and “CFS1.0” as
28 summarized in Enclosures A, B, C, D, and E and the Table, do not provide the user with the capability to
29 design his or her own aircraft, produce flight model data files that are compatible with the simulator, and
30 then “fly” the user-designed aircraft in the flight simulator.

1 Thus, the rejection of independent Claim 1 over the cited art should be withdrawn, at least because
2 the cited art neither teaches nor suggests applicant's claim recitation of simulated flying of the aircraft using
3 the plurality of flight model data files based on a user's design of the aircraft. Because dependent claims
4 include all of the elements of the independent claim from which the dependent claims ultimately depend,
5 dependent Claims 2-11 are patentable for at least the reasons discussed above in regard to independent
6 Claim 1. Accordingly, the rejection of dependent Claims 2-11 under 35 U.S.C. § 102(b) should also be
7 withdrawn.

8 Patentability of Independent Claim 12

9 Independent Claim 12 recites a method for enabling a user to create or modify a design for an
10 aircraft and evaluate flight characteristics of the design as created or modified by the user. The Examiner
11 has rejected independent Claim 12 for the same reasons for his rejection of independent Claim 1. However,
12 because independent Claim 12 generally includes step (d) that is similar to step (d) of independent Claim 1,
13 for the reasons given presented above for the patentability of independent Claim 1, the cited art does not
14 disclose or suggest applicant's claim recitation of simulated flying of the aircraft using the flight model data
15 that are based on a user's design of the aircraft.

16 Thus, the rejection of independent Claim 12 over the cited art should be withdrawn. Because
17 dependent claims include all of the elements of the independent claim from which the dependent claims
18 ultimately depend, dependent Claims 13-18 are patentable for at least the reasons discussed above in regard
19 to independent Claim 12. Accordingly, the rejection of dependent Claims 13-18 under 35 U.S.C. § 102(b)
20 should also be withdrawn.

21 Patentability of the Rejection of Independent Claim 19

22 Independent Claim 19 recites a system for enabling a user to create or modify a design for an
23 aircraft and evaluate flight characteristics of the design. The Examiner has rejected independent Claim 19
24 for the same reasons applied in his rejection of independent Claim 1. However, for the reasons presented
25 above in connection with traversing the rejection of independent Claim 1, it will be apparent that the cited
26 art does not disclose or suggest applicant's claim recitation of enabling a user to evaluate the flight
27 characteristics of the design by simulating flying of the aircraft wherein the flight characteristics of the
28 design simulated during flying are based upon the plurality of flight model data files.

29 Thus, the rejection of independent Claim 19 over the cited art should be withdrawn. Because
30 dependent claims inherently include all of the elements of the independent claim from which the dependent

1 claims ultimately depend, dependent Claims 20-28 are patentable for at least the reasons discussed above in
2 regard to independent Claim 19. Accordingly, the rejection of dependent Claims 20-28 under
3 35 U.S.C. § 102(b) should be withdrawn.

4 Patentability of the Rejection of Independent Claim 29

5 Independent Claim 29 is directed towards a system for enabling a user to create or modify a design
6 for an aircraft and evaluate flight characteristics of the design. The Examiner has rejected independent
7 Claim 29 for the same reasons for his rejection of independent Claim 1. However, for reasons similar to
8 those presented to demonstrate the patentability of independent Claim 1, the cited art does not disclose or
9 suggest applicant's claim recitation of enabling the user to evaluate the flight characteristics of the design by
10 simulating flying of the aircraft, using the flight model data.

11 Thus, the rejection of independent Claim 29 over the cited art should be withdrawn. Because
12 dependent claims inherently include all of the elements of the independent claim from which the dependent
13 claims ultimately depend, dependent Claims 30-34 are also patentable for at least the reasons discussed
14 above in regard to independent Claim 29. Accordingly, the rejection of dependent Claims 30-34 under
15 35 U.S.C. § 102(b) should be withdrawn.

16 In view of the Remarks set forth above, it will be apparent that the claims in this application define a
17 novel and non-obvious invention. The application is in condition for allowance and should be passed to
18 issue without further delay. Should any further questions remain, the Examiner is invited to telephone
19 applicant's attorney at the number listed below.

20 Respectfully submitted,

21
22
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27 **Enclosures**

28 Declaration of Michael K. Zyskowski w/Enclosures A-E,
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